

CLAIMS:

1. A motion sequence pattern detector for detecting presence of film material in a series of consecutive video fields, the motion sequence pattern detector comprising processing means which is arranged:

- to compute for a first one of the consecutive fields a value of a video motion measure and a value of a film motion measure; and

- to determine the presence of film material on basis of the value of the video motion measure and the value of the film motion measure, the value of the video motion measure being computed by:

- establishing a plurality of motion patterns for respective groups of pixels of the first one of the consecutive fields;

- comparing each of the plurality of motion patterns with a predetermined video motion pattern and conditionally increasing the value of the video motion measure, the value of the film motion measure being computed by:

- comparing each of the plurality of motion patterns with a predetermined film motion pattern and conditionally increasing the value of the film motion measure.

2. A motion sequence pattern detector as claimed in claim 1, wherein the groups of pixels each have one pixel.

3. A motion sequence pattern detector as claimed in claim 1, wherein the processing means are arranged to establish a first one of the motion patterns by computing:

- a first difference between a first pixel value of the first one of the consecutive fields and a second value being derived from a second one of the consecutive fields; and

- a second difference between a third pixel value of a third one of the consecutive fields and a fourth value being derived from the second one of the consecutive fields.

4. A motion sequence pattern detector as claimed in claim 3, wherein the processing means are arranged to establish the first one of the motion patterns by comparing

the first difference with a first predetermined motion threshold and the second difference with a second predetermined motion threshold.

5. A motion sequence pattern detector as claimed in claim 4, wherein the processing means are arranged to establish a first one of the motion patterns by:

- computing a third difference between the first pixel value of the first one of the consecutive fields and the third pixel value of the third one of the consecutive fields;
- computing a first minimum of the first difference and the third difference and assigning the first minimum to the first difference; and

- computing a second minimum of the second difference and the third difference and assigning the second minimum to the second difference.

6. A motion sequence pattern detector as claimed in claim 4 or 5, wherein the processing means are arranged to increase the value of the video motion measure if the first difference is larger than the first predetermined motion threshold and the second difference is larger than the second predetermined motion threshold.

7. A motion sequence pattern detector as claimed in claim 4 or 5, wherein the processing means are arranged to modify the value of the film motion measure if only the first difference is larger than the first predetermined motion threshold or only the second difference is larger than the second predetermined motion threshold.

8. A motion sequence pattern detector as claimed in claim 1, being arranged to output a signal indicating presence of film material at a location corresponding to a first one of the groups of pixels on basis of comparing a first one of the motion patterns, with the predetermined film motion pattern, the first one of the motion patterns corresponding to the first one of the groups of pixels.

9. A motion sequence pattern detector as claimed in claim 1, comprising a contrast measurement unit for selecting a first one of the groups of pixels by means of:

- computing a first value of a contrast measure for a first set of pixels of the first one of the consecutive fields;
- comparing the first value of the contrast measure with a predetermined contrast threshold; and

- assigning the first set of pixels as the first one of the groups of pixel if the first value of the contrast measure is higher than the predetermined contrast threshold.

10. A motion sequence pattern detector as claimed in claim 9, wherein the contrast measurement unit is arranged to compute the first value of the contrast measure on basis of calculating a first difference between the value of a first one of the pixels of the first set of pixels and the value of another pixel of the first one of the consecutive fields.

11. A motion sequence pattern detector as claimed in claim 10, wherein the contrast measurement unit is arranged to compute the first value of the contrast measure on basis of calculating a second difference between the value of the first one of the pixels of the first set of pixels and the value of a further pixel of a second one of the consecutive fields.

12. A motion sequence pattern detector as claimed in claim 9, which is arranged to compute a new predetermined contrast threshold on basis of the number of times the values of the contrast measure being computed for the first one of the consecutive fields have exceeded the predetermined contrast threshold.

13. An image processing apparatus , comprising:

- receiving means for receiving a signal corresponding to a series of consecutive video fields ;
- a motion sequence pattern detector as claimed in claim 1; and
- an image processing unit for computing a sequence of output images on basis of the series of consecutive video fields , the image processing unit being controlled by the motion sequence pattern detector.

14. An image processing apparatus as claimed in claim 13, characterized in further comprising a display device for displaying the output images.

15. An image processing apparatus as claimed in claim 14, characterized in that it is a TV.

16. An image processing apparatus as claimed in claim 13, characterized in further comprising storage means for storage of the output images.

17. An image processing apparatus as claimed in claim 16, characterized in that it is a DVD recorder.

5 18. A method of detecting presence of film material in a series of consecutive video fields , comprising:

- computing for a first one of the consecutive fields a value of a video motion measure and a value of a film motion measure; and

10 - determining the presence of film material on basis of the value of the video motion measure and the value of the film motion measure,
the value of the video motion measure being computed by:

- establishing a plurality of motion patterns for respective groups of pixels of the first one of the consecutive fields;

15 - comparing each of the plurality of motion patterns with a predetermined video motion pattern and conditionally increasing the value of the video motion measure, the value of the film motion measure being computed by:

- comparing each of the plurality of motion patterns with a predetermined film motion pattern and conditionally increasing the value of the film motion measure.

20 19. A computer program product to be loaded by a computer arrangement, comprising instructions to detect presence of film material in a series of consecutive video fields , the arrangement comprising processing means and a memory, the computer program product, after being loaded, providing said processing means with the capability to carry out the following steps:

25 - computing for a first one of the consecutive fields a value of a video motion measure and a value of a film motion measure; and

- determining the presence of film material on basis of the value of the video motion measure and the value of the film motion measure,
the value of the video motion measure being computed by:

30 - establishing a plurality of motion patterns for respective groups of pixels of the first one of the consecutive fields;

- comparing each of the plurality of motion patterns with a predetermined video motion pattern and conditionally increasing the value of the video motion measure, the value of the film motion measure being computed by:

- comparing each of the plurality of motion patterns with a predetermined film motion pattern and conditionally increasing the value of the film motion measure.